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ABSTRACT

The paper describes a program developed for the children of migrant farmworkers, which uses bilingual adults from these same migrant families as the primary teaching staff. The curriculum used in the teaching of academic areas and oral language in Spanish and English is described, as well as specific adaptations that would be useful in teaching low performing children. The staff training model is also reviewed along with teaching techniques useful in special education classrooms--some of which are particularly geared to the special needs of non-English speaking children. Test data are presented on a large number of children over a 7 year period showing the difference in performance by high and low ability Spanish speaking children after periods of 1, 2, or more years in the Individualized Bilingual Instruction program. Gains by both high and low ability children are both educationally and statistically significant. The author also outlines resources available for other school districts that might want to adopt part of the model. (Author/SB)

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INDIVIDUALIZED BILINGUAL INSTRUCTION

IBI: A VALIDATED PROGRAM MODEL EFFECTIVE WITH BILINGUAL HANDICAPPED CHILDREN

by

Dr. Beverly B. McConnell

Paper presented at the Council for Exceptional Children Conference on The Exceptional Bilingual Child, Feb. 18, 1981, New Orleans, LA

ABSTRACT: This paper described a program originally developed for the children of migrant farm workers, which uses bilingual adults from these same migrant families as the primary teaching staff. The curriculum used in the teaching of academic areas and oral language in Spanish and English is described, as well as specific adaptations that would be useful in teaching low performing children. The staff training model is also described including many specific teaching techniques that would be useful in special education classrooms; some that are particularly geared to the special needs of non English speaking children. Test data is presented on a large number of children which was accumulated over a seven year period showing the difference in performance by high and low ability Spanish speaking children after periods of one, two and three or more years in the IBI program. Gains by both high and low ability children are both educationally and statistically significant. The paper also outlines resources available for other school districts who might want to adopt part of the IBI model.

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WHAT IS THE IBI PROGRAM?

It is a national research and demonstration program. It was funded to see if an effective educational program could be developed for bilingual children of migrant farm workers that would rely for its primary teaching staff on adults from these same migrant families. The program is called IBI, which stands for Individualized Bilingual Instruction. It is now in its ninth year of program operation and it has served over 1000 children.

On the basis of a very comprehensive evaluation, IBI has been proven effective in raising children's test scores significantly in math and reading and in comprehension of both Spanish and English. It has therefore been approved by the U.S. Office of Education as a nationally validated program listed in its publication "Educational Programs that Work."

The migrant children served by IBI represent a full range of academic ability. However, IBI has analyzed student performance for children of high, medium, and low ability and these data show that the program is very effective in bringing up the test scores of low performing students. In addition, IBI is currently serving three Downs Syndrome children and a number of other Spanish speaking children with a variety of physical and emotional handicaps.

As a nationally validated educational program, IBI is part of the national diffusion network. This means that it has received a grant to pay for staff time used to provide technical services and to train teachers and other staff in other school districts which elect to adopt some part of the IBI curriculum. At this time, IBI has 20 adoptions in seven states. One school district has adopted the IBI program specifically for use in its special education classrooms. Two adoption sites are using the IBI model with children speaking various Asian languages. Therefore, although IBI was developed for Spanish speaking migrant children, the model seems to fit educational needs of other groups, including the exceptional bilingual child.

WHY WAS THE IBI PROGRAM DEVELOPED?

The IBI program was designed to serve non English speaking

and bilingual children from families doing migrant farm labor. As already mentioned, a key feature of the IBI program is that it uses the parents or other adults from the same linguistic group as the children served (not professional teachers) as the primary teaching staff. There are professional teachers hired in the IBI program, but instead of working directly with the children, each of the professional staff supervises from six to ten paraprofessionals who in turn work with from 60 to 100 children, from preschool age up to third grade. Curriculum and training materials were developed for the IBI model based on the expectation that these could be successfully used by adults who could communicate with the children in their own language, but who otherwise had limited background as teachers.

There were a number of reasons for developing a program that would use this kind of staffing. One part of the IBI program is a "mobile component" designed to see if some greater continuity could be achieved in the schooling of children who move several times a year if someone who moves with them in the same family or group of families could be a teacher for part of the day. This bilingual adult guides the children through a prepared bilingual curriculum that supplements whatever educational program the local schools offer, which in many cases--particularly in northern states--is not taught by bilingual teachers.

It was felt that an educational program that used primarily paraprofessional teachers would be useful for other reasons in migrant impact areas. Since in many parts of the northern states migrants represent a temporary linguistic minority, school districts do not have year round bilingual programs nor can they recruit professional teachers with the necessary bilingual skills in anything like the number needed. Migrant children also tend to scatter so there are small numbers of them in individual classrooms throughout a district. This means that a great many children are not reached if a district feels that to be cost effective it can only afford to serve linguistic minority children where there is a sufficient concentration to warrant an entire class served by a professional teacher.

The bilingual child with specific learning disabilities represents a similar situation. It is unlikely that such children will be found in any great concentration. For a great many languages there will be a shortage of professional teachers. It is likely, however, that some adult who speaks the child's language could be recruited full or part-time as a teacher, and if the curriculum materials, training and supervision could make this previously untrained person into an effective teacher, many more bilingual children could be served.

WHAT KIND OF EDUCATIONAL MATERIALS DOES IBI USE?

There was an educational precedent for the kind of educational program IBI wanted to develop in an educational system used rather widely since the mid-60's known as PSI, "Personalized System of Instruction". Originally developed for college teaching, it has subsequently been adapted for teaching students at every age level. The requirements of the PSI system are that the instructor for a course develops the materials into a sequence of lesson units which individual students can complete at their own pace, with student tutors helping to guide them through the lesson sequence, explaining and checking for mastery.

IBI developed a parallel to this sytem for bilingual migrant children preschool age through grade three. A sequential curriculum track of lessons was developed for each curriculum area (oral language in Spanish and English, preschool readiness skills, math and reading in Spanish and English). The bilingual migrant adult teachers work with small groups of children, sometimes as a group but more often individually, moving from one child to another as each may be working at a different place within the curriculum sequence. The teacher has been trained how to model and explain materials, and how to check for mastery in guiding children through the curriculum track.

Since the curriculum is already sequenced, the teacher does not have to develop lessons or know how to sequence them from the simple level to more complex concepts. Since each curriculum track has both a placement test and mastery checks for each lesson unit,

the teacher is able to know where children should be working and if they have mastered what they have learned. The lesson materials also have built in repetition and review to assure that skills are maintained.

In many ways this description of the curriculum for the IBI program could be taken from the pages of almost any textbook describing the needs of exceptional children: structure, sequencing, small steps, individualization.

Curriculum materials available from commercial sources were used whenever possible. However, IBI made many adaptations which might make the materials even more useful in special education programs. For example in math, supplemental materials were developed that would provide much more drill and practice. A pre-math series of lessons was also developed by the program in both Spanish and English which was designed to "take the children back to square one." By this I mean that most commercial kindergarten level math materials are based on the assumption that the child already knows how to make circles, X's or draw lines to match objects, and that the child can count, recognizes numbers, and has some notion of equality. The IBI pre-math sequence doesn't assume any of these abilities and systematically teaches them.

IBI has developed a similar set of beginning lessons in oral language in Spanish and English. These start by teaching the child how to pay attention to a teacher demonstration, then how to respond first by pointing and then with one or two word phrases.

Pre-reading skills in Spanish are also taught by special materials developed by IBI. These begin by teaching children how to follow a line from left to right. It then teaches a few beginning sounds and word blending skills, which enables the children to begin work in the commercial curriculum materials IBI uses to teach Spanish reading.

The academic curriculum tracks all start at the preschool level and most extend up to third grade, but are otherwise ungraded and children start the curriculum for each academic area wherever indicated by placement tests, and move through them at their own pace. There is daily and weekly monitoring of child progress and

the supervising teacher helps plan remediation and review or an alternate presentation if progress data indicate this is necessary.

WHAT KIND OF TRAINING IS GIVEN IBI TEACHERS?

IBI has a series of four training units which teach general skills common to all curriculum areas. These deal with general classroom management techniques such as how to keep a group of children on task while working with individual children. The general units stress positive reinforcement techniques such as how to praise differentially, praising good work for one child while another is praised just for paying attention if this represents progress in that particular child's stage of development.

In addition, there are training units specific to each curriculum area--sometimes a series of units for each area. To some extent these training units take the place of the guidance a professional teacher would be able to get out of a teacher's guide. Without an academic background in education, IBI found the para-professionals could not readily understand most materials published in teacher's guides. They found them to be overly wordy and full of educational "code words" that did not have much meaning for them. The training therefore demonstrates how to use the materials, how to model different concepts, how to check for understanding, how to pace the materials and how to maintain interest.

A number of special teaching techniques that are given to IBI teachers would be quite useful to special education teachers. For example, IBI trains teachers to use a "red line technique." This is used when children are working in workbooks or on practice sheets. Each time the child is contacted he receives whatever instruction is necessary to know how to work on a set of materials, and then a red line is drawn indicating how far the child is to work. How much work is included before the red line is determined by the teacher's estimate of the child's ability to stay on task without additional attention, or to designate some point at which the task changes and additional modeling is necessary. Red lines are given in such a way that within any 15 or 20 minute academic

period there will be several teacher contacts with each child.

A "red star technique" is used with the reading curriculum. This means that the teacher goes through the reading workbook before the child begins the lesson and puts a red star next to all sounds that will be new to the child. When the child reaches a red star he raises his hand so that teacher will come at that point and model the new sound at face to face range. For a child whose first language is something other than English, this method assures that the child can really hear the sound which may be quite unlike any in his first language. The child repeats the sound, and sometimes is given contrasting sounds that might provide some confusion, until the teacher feels confident that the new sound can be heard and reproduced with reasonable accuracy.

The IBI training includes techniques which are meant to build language development into the teaching of every curricular area. In handwriting, for example, teachers are trained to ask children to pick out "the best one" in a line or page of writing, and then asked why it is the best. This provides a content for meaningful communication incidental to the teaching of motor skills.

The general method used in the IBI training is explanation with demonstration--all teaching skills are modeled since imitation seems the shortest route to understanding. After presentation in a training session, the supervising teachers observe the paraprofessionals informally and may step in and take over teaching individual children or a group briefly if it appears the trainee does not yet understand the teaching techniques that were presented. Each training unit then has an observation form on which actual teaching behaviors are recorded, and a checklist establishing a criteria for "passing" the training unit when most of the teaching behaviors can be consistently demonstrated. It also includes monitoring observations which are used after some time has passed to see if teaching behaviors are being maintained.

Since IBI has been asked to disseminate its model, it has also developed a complete set of materials to train the trainers which another site would need in order to carry out the training program. And IBI has developed an adaptation of its training process that compresses the key skills for different curriculum areas

into a short intensive presentation for use when other schools want to train a large number of people in a one or two day preservice session for a particular curriculum area.

WHAT EVIDENCE DOES IBI HAVE THAT ITS MODEL IS EFFECTIVE WITH SPANISH SPEAKING CHILDREN OF DIFFERENT LEVELS OF ABILITY?

The following three figures show the difference in test scores made by children in the IBI program according to relative classification of ability based on pretest scores in Spanish vocabulary (the primary language of all the children included in this analysis). Each figure shows the average or mean score by ability group of children based on pretests ("no attendance group"), and after periods of one year, two years and finally three or more years in the IBI program. Tables at the end of this paper show the statistical detail of these scores, including the scores of the "middle ability" group which was left out of the figures for the sake of simplifying the visual presentation of data. These figures are based on the analysis of 1100 sets of test scores accumulated in the IBI program over the past seven years in which these particular tests have been in use.

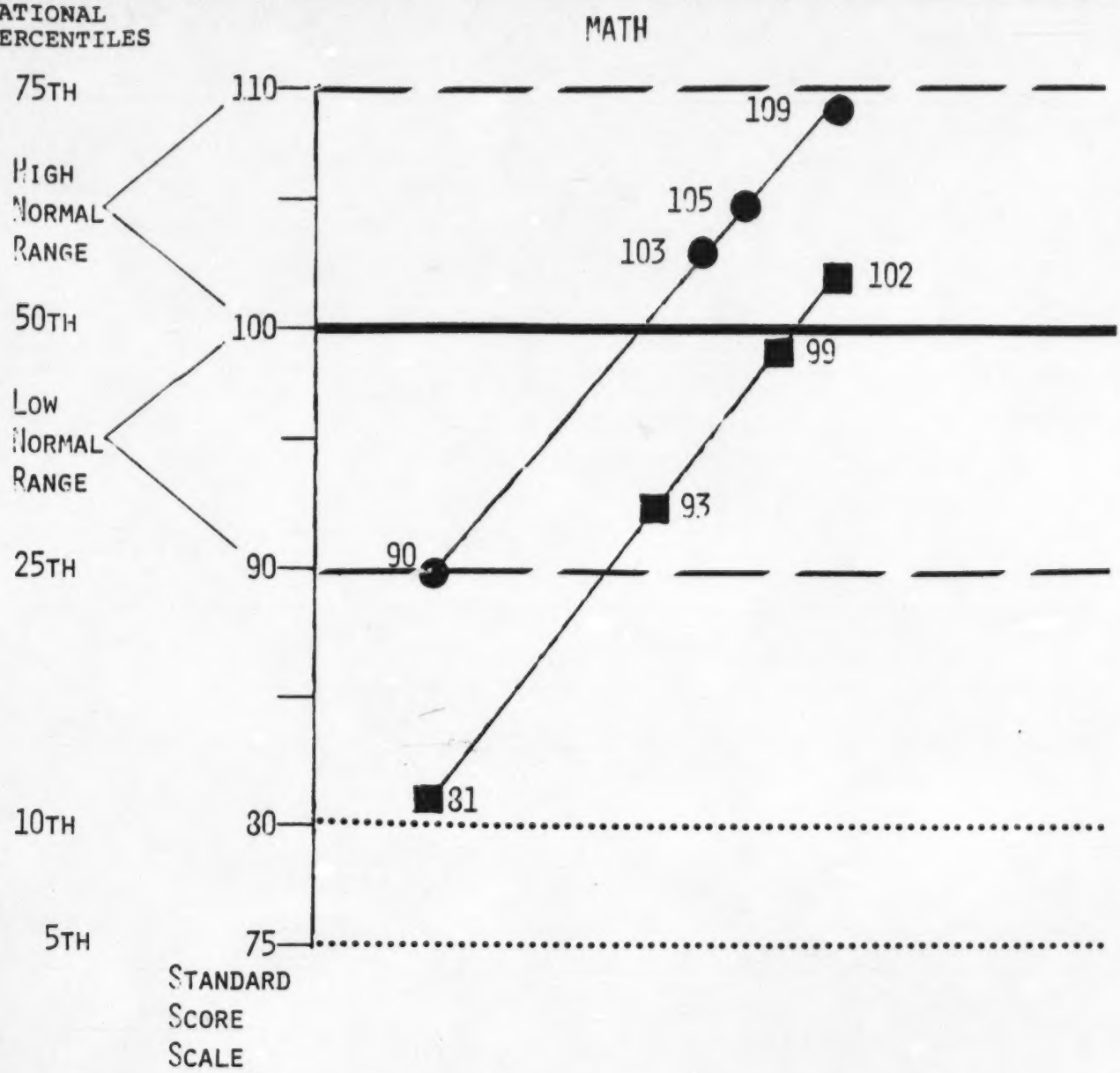
In order to combine scores of children across grade levels, the raw scores for each test were converted to standard scores which for every age level have a mean of 100 and a standard deviation of 15. The Wide Range Achievement Test was used to measure English reading and math, and the Peabody Picture Vocabulary Test to measure vocabulary in English, with a project translation of Form B used to measure vocabulary in Spanish. The math subtest was administered to children in either Spanish or English, and the reading and English vocabulary test only in English.

A distribution of pretest Spanish vocabulary scores for all children was used to determine the ability grouping. The lowest third was arbitrarily designated "low ability", middle third "middle ability" and top third "high ability". This method means that the ability designation is relative to this particular group of children rather than to some external standard.

As will be obvious from examining the figures and tables, if the national norms for these tests had been used, which would have compared IBI children to the native English speaking children of the dominant culture with whom the tests were standardized, all of the children would have been classified as "low ability" based on their pretest scores. For example, the highest pretest standard score of the "high ability" group is 90 in math (the only subject tested in Spanish and the one least affected by language differences). A standard score of 90 in math is the equivalent of the 25th percentile by national norms--i.e., only 25% of children in the national norming sample had a score this low or lower. The pretest reading score of the "high ability" group in IBI was 84, which corresponds to the 14th percentile by national norms. And the mean score in English vocabulary of IBI's "high ability" group is 42, which is lower than the lowest 1% of children used to norm the Peabody test. All of the pretest scores of the IBI "low ability" children are correspondingly lower in all cases; a standard score of 81 in math, which would be the 10th percentile by national norms, and a standard score of 77 in English reading, which is the 6th percentile, and a standard score (or IQ) of 19 in English vocabulary--once again, below the lowest percentile recorded for the Peabody test norms.

Figure 1 shows the gains in math skills by IBI children in the "high" and "low" ability groups after one, two and three years attendance. For both ability groups the differences based on attendance reach a high level of statistical significance. The gains are also clearly educationally significant in that the low ability group went from the 10th to the 55th percentile, using the reference of the national norms, in a three year period. The high ability children went from the 25th to the 73rd percentile in the same period, using national norms as a reference point; i.e., considerably above the national average scores in math as represented by the 50th percentile.

The gains by the two groups are almost identical in total score difference--i.e., the IBI program appears to be about equally beneficial to children in the "low" or the "high" ability



KEY: THE SYMBOLS REPRESENT THE MEAN STANDARD SCORE OF CHILDREN WITH NO ATTENDANCE, AND AFTER 1 YEAR, 2 YEARS, AND 3 YEARS ATTENDANCE GOING FROM LEFT TO RIGHT

GROUPS

● = HIGH ABILITY

■ = LOW ABILITY

ANOVA: ABILITY $F = 311.2^{**}$

ATTENDANCE $F = 112.3$

INTERACTION $F = 1.2^{NS}$

$^{**}P < .001$

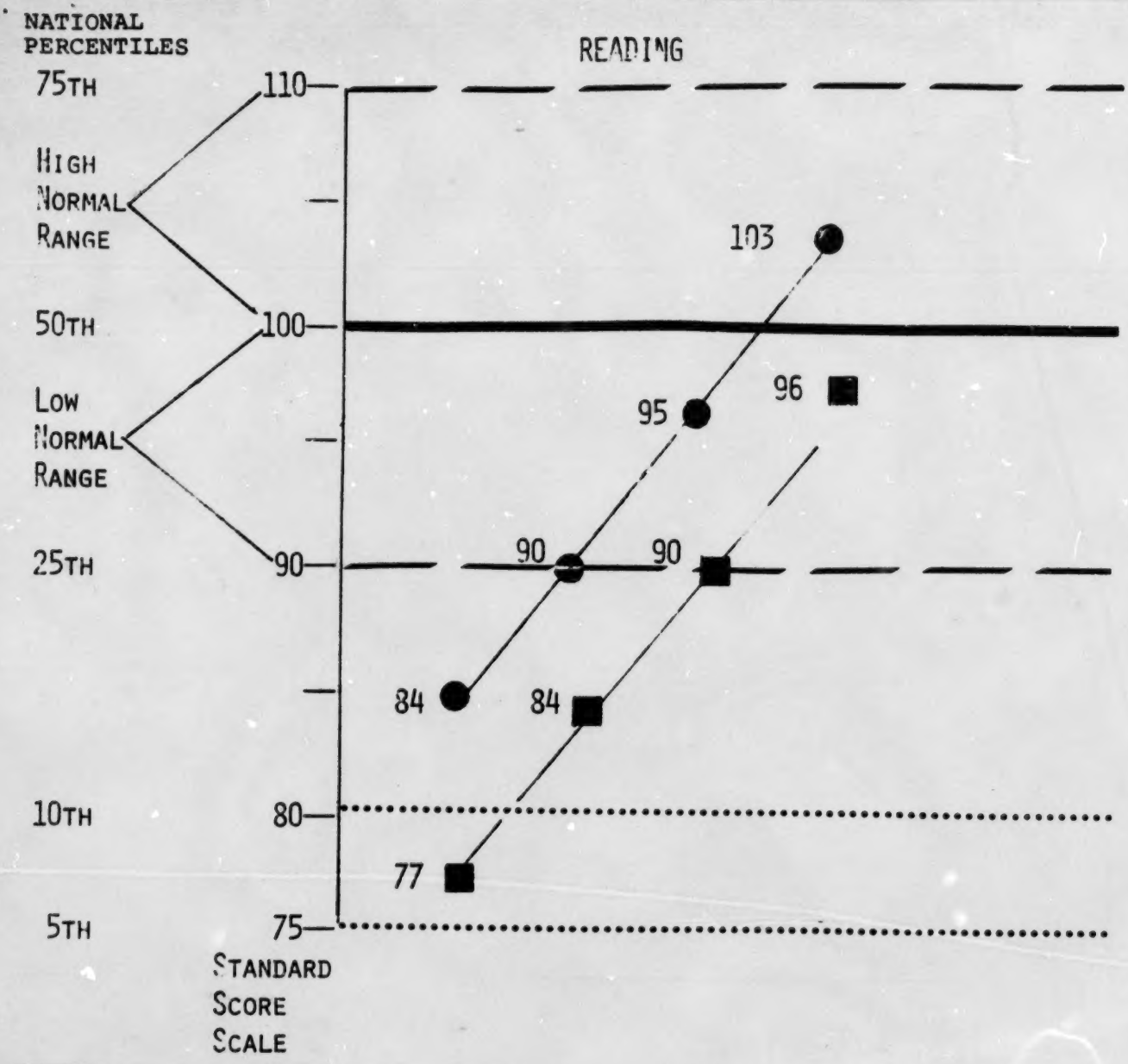
FIGURE 1: Mean Standard Scores in Math (Wide Range Achievement Test) by Ability Group and by Period of Attendance in IBI Program for Children Whose First Language is Spanish

group. The main difference is in the range of scores, which is significantly lower for the "low ability" group, and different in the time it takes for children to reach a comparable level in terms of an external standard--i.e., the "high" ability group of IBI children exceeded the national average after one year and it took the "low ability" IBI children three years to exceed the national average in math.

Reading scores are shown in Figure 2 which follows. Once again, children in the "low ability" group have scores significantly below the scores of children in the "high ability" group. But both groups show an almost identical gain in three years--19 points (or more than one full standard deviation) on a standard score scale. Each period of attendance leads to a significant increase in scores for both groups, and the differences based on attendance are statistically and educationally significant. In English reading, children in the low ability group go from a standard score of 77 to 96, which means that within three years they have almost, but not quite, reached a level comparable to the average scores of native English speaking children. A standard score of 96 corresponds to the 39th percentile. Children in the "high ability" group achieve a standard score of 103 after three years, which is somewhat above the national average for this test. A standard score of 103 is the equivalent of the 58th percentile.

In both academic areas, therefore, the Spanish speaking children in the IBI program have become nearly equal to and in some cases better than children from the dominant culture as a result of a structured, individualized curriculum taught by paraprofessional teachers trained in the IBI model.

Figure 3 shows the scores of children in English vocabulary. In this case the low ability children have made overall the greatest gain. However, statistically there is no significant interaction between ability level and gains based on attendance. For both groups the increase in scores accompanying each period of program attendance is enough to be statistically significant. However, in terms of the national norms for this test, IBI "low ability" children, even after three years attendance involving a gain of 49 standard score points (more than three standard



KEY: THE SYMBOLS REPRESENT THE MEAN STANDARD SCORE OF CHILDREN WITH NO ATTENDANCE, AND AFTER 1 YEAR, 2 YEARS, AND 3 YEARS ATTENDANCE GOING FROM LEFT TO RIGHT

GROUPS

● = HIGH ABILITY

■ = LOW ABILITY

ANOVA: ABILITY F = 27.6**
ATTENDANCE F = 80.5**
INTERACTION F = 0.4NS

**P < .001

FIGURE 2: Mean Standard Scores in English Reading (Wide Range Achievement Test) by Ability Group and by Period of Attendance in IBI Program for children whose first language is Spanish

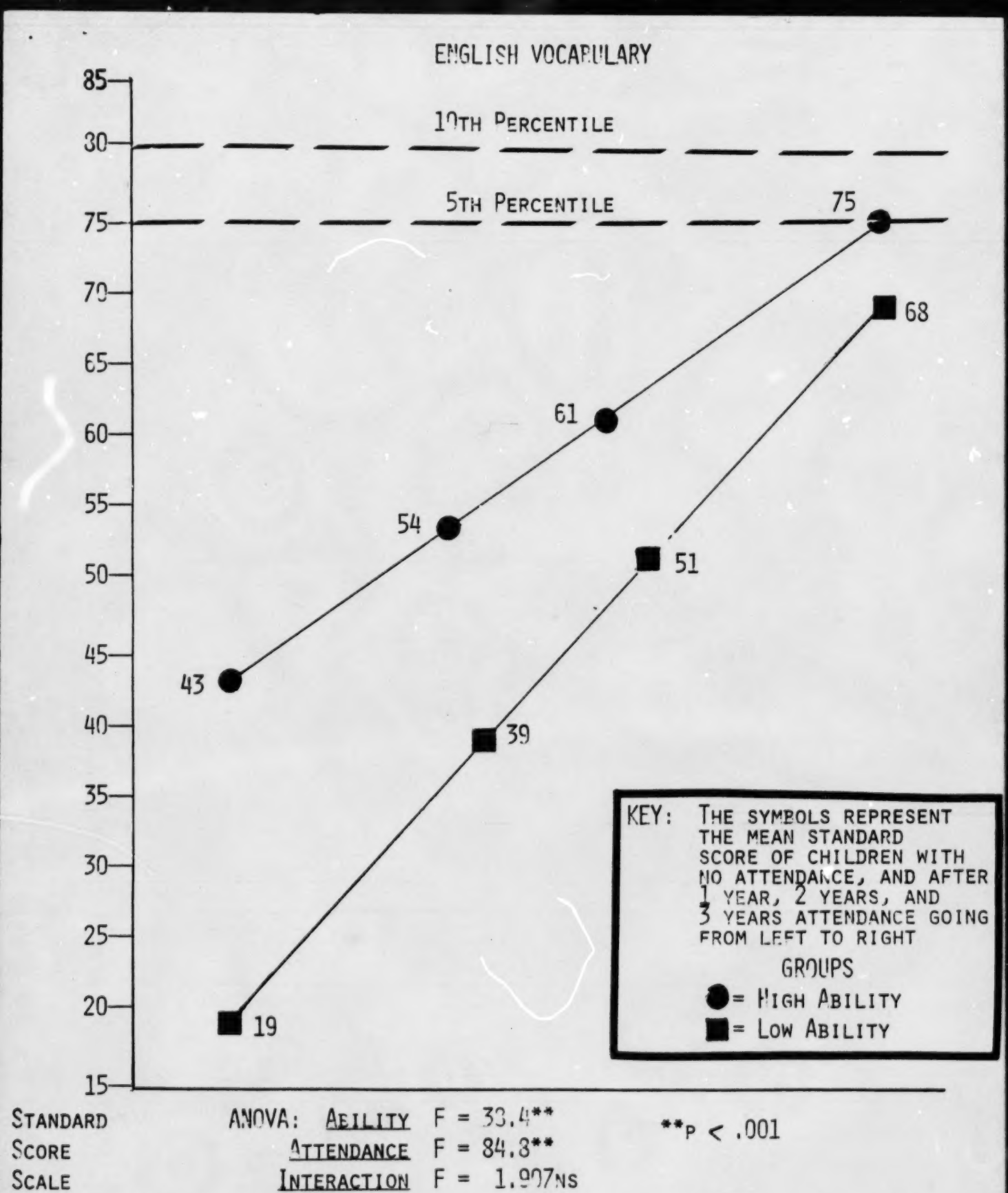


FIGURE 3: Mean Standard Scores in English Vocabulary (Peabody Picture Vocabulary Test) by Ability Group and by Period of Attendance in the IBI Program for children whose First Language is Spanish

deviations increase), have an average score almost too low to record within the range represented in the Peabody national norms. The "high ability" children after three years have an English vocabulary score the equivalent of the 5th percentile on the Peabody norms. These are the same children who are scoring above the national norms in both reading and math, which serves to illustrate the distortion found by applying verbal IQ scores to linguistically different children.

These figures illustrate the benefits of the IBI program for children whose academic and linguistic performance without benefit of the program would have made them candidates for special education programs in most school districts. The numbers of children served by the IBI program who represent more profound handicaps do not lend themselves to statistical analysis. However, IBI has been able to incorporate all of the handicapped children into the regular program, using at least part of the curriculum materials. In the IBI program, academic periods are alternated with informal learning periods when children choose their own activities. Teachers who have Downs Syndrome children in their groups praise these children for attending behaviors and every small step of progress in academic or motor skills during the regular lesson periods which they attend with the other children. The teachers then tutor the Downs Syndrome child during the time other children are in their "choice" activity period, using activities derived from the developmental scale published by the University of Washington which has a nationally validated program specifically for Downs Syndrome Children.

CONCLUSION

IBI is a program of proven effectiveness with bilingual or non English speaking children, which has been used successfully with academically and linguistically "low performing" children, as well as with children representing more profound physical and emotional handicaps. This paper has attempted to provide a

description of the IBI program including many of the specific techniques which might be useful to others who are working with the bilingual exceptional child.

Because IBI is a developer-demonstrator program in the national diffusion network, it will provide training and follow-up visits to other school districts who want to adopt any part of the model at minimal costs (usually the adopting district pays only travel costs for IBI staff who are available from either Washington state or Texas IBI sites). Adopting districts can also apply for Title IVC grants which are available in every state, which may be used to cover "start-up" costs for districts to adopt a nationally validated program. These start-up costs include initial curriculum materials, and staff training including the cost of substitutes.

Additional information on the IBI program is available from the IBI Dissemination Office, P.O. Box 2367, Pasco, WA 99302, or the IBI Evaluation Office, S.W. Cityview, Pullman, WA 99163.

Table 1

Mean standard scores by attendance period and ability group for IBI children on the Peabody Picture Vocabulary Test in English, and on the subtests for math and reading of the Wide Range Achievement Test.

Ability Group and Attend.	No.	English Vocabulary Mean Standard Score	St. Dev.	Math Mean Standard Score	St. Dev.	English Reading Mean Standard Score	St. Dev.
Low							
None	144	18.5	15.1	80.5	14.3	77.4	10.8
1 yr.	69	38.8	25.0	93.1	14.6	84.2	11.3
2 yrs.	83	51.0	27.8	99.1	12.9	89.9	11.1
3 yrs.	40	67.6	28.9	102.4	10.9	95.9	13.4
Medium							
None	125	31.0	24.2	85.7	12.1	80.4	10.3
1 yr.	52	47.4	23.6	97.5	13.7	87.3	13.9
2 yrs.	97	51.1	25.9	102.4	13.4	91.4	10.7
3 yrs.	41	71.4	22.7	112.1	11.6	96.2	9.9
High							
None	124	42.5	27.3	89.5	11.7	84.3	12.5
1 yr.	33	53.5	28.2	102.6	11.5	90.4	11.0
2 yrs.	88	60.5	28.1	104.8	13.1	95.0	12.0
3 yrs.	88	75.4	22.7	109.0	13.9	103.4	15.7